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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/743,624

04/22/2004

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71632

7402

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04/17/2007

EXAMINER

OH, TAYLOR V

ART UNIT

PAPER NUMBER

1625

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/743,624	LAVOIE, GINO GEORGES	
	<b>Examiner</b>	<b>Art Unit</b>	
	Taylor Victor Oh	1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/22/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Final Rejection***

The Status of Claims

Claims 1-21 are pending.

Claims 1-21 have been rejected.

**Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejection of Claims 1-21 under 35 U.S.C. 112, second paragraph, has been maintained due to applicants' failure to modify the claim.

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**The rejection of Claims 1-16, and 21 under 35 U.S.C. 103(a) as being unpatentable over Parker et al (US 6,476,257) in view of Shigeyasu et al (US 4,160,108) .**

The rejection of Claims 1-16, and 21 under 35 U.S.C. 103(a) as being unpatentable over Parker et al (US 6,476,257) in view of Shigeyasu et al (US 4,160,108) has been maintained with the reasons of record on 11/28/06.

**The rejection of Claims 1-21 under 35 U.S.C. 103(a) as being unpatentable over Partenheimer et al (US 4,786,753) in view of Shigeyasu et al (US 4,160,108)**

The rejection of Claims 1-21 under 35 U.S.C. 103(a) as being unpatentable over Partenheimer et al (US 4,786,753) in view of Shigeyasu et al (US 4,160,108) has been maintained with the reasons of record on 11/28/06.

**Applicants' Argument**

Applicants argue the following issues:

- a. The phrase "substantially free of" is defined in the specification and another phrase "incompletely oxidized reaction products comprising 4-carboxybenzaldehyde compound" is acceptable since at least one of the many products to be 4-carboxybenzaldehyde compound;

- b. None of Park et al and Shigeyasu et al do not disclose that the molar ratio of bromine to manganese is 1.5 or less and the amount of nickel is at least 500 ppm during the processes since Park et al teaches that the molar ratio of bromine to manganese is 1.76 , but not 1.5 and that of nickel is 28 ppm, but not at least 500 ppm, whereas Shigeyasu et al disclose that the molar ratio of bromine to manganese is 1.54 to 9.62 , but not 1.5 and that of nickel is from 50 to 175 ppm, but not at least 500 ppm;
- c. Partenheimer et al would not suggest the claimed invention because it requires a catalyst system that is substantially free of zirconium;
- d. Partenheimer et al disclosing the method of producing terephthalic acid by oxidizing p-xylene in the presence of a catalyst composition comprising Ni, Mn, and bromine at a pressure of 150 psig and at a temperature of 160<sup>0</sup> C is in error;
- e. Partenheimer's et al molar ratio of bromine to manganese in Examples 15-18 is 2.0, which is higher than applicants' claim of 1.5 or less; and
- f. Partenheimer's et al example 17 does not provide any teaching whatsoever on how to modify that composition catalyst system in a manner other than by addition of zirconium.

Applicants' arguments have been noted, but the arguments are not persuasive.

First, regarding the first argument, the Examiner has noted applicant's argument. Although the examiner agrees with applicants that the phrase "substantially free of" was defined in the specification, the term "comprising" in the phrase "incompletely oxidized reaction products comprising 4- carboxybenzaldehyde compound" is unacceptable since "reaction products" can be viewed as the definitive chemical compounds. Therefore, the examiner recommends to change from "incompletely oxidized reaction products" to "incompletely oxidized reaction composition."

Second, regarding the second and the fifth arguments, the Examiner has noted applicant's argument. However, the claimed ranges and the prior art do not overlap but are close enough that one skilled in the art would have expected them to have the similar reaction conditions in the absence of unexpected results. Therefore, applicants' arguments are not persuasive.

Third, regarding the third and the sixth arguments, the Examiner has noted applicant's argument. However, the meaning of the phrase "substantially free of" implies that there is little or nothing of zirconium present in the catalyst system. On the contrary to applicants' argument, regardless of the error in the table II present in the prior art, the fact remains still the same as shown the table II unless Partenheimer et al admitted that there were mistakes made in the table II:

TABLE II

Rate of Oxidation of Various Types of Catalysts <sup>a</sup> For the Oxidation of Paraxylene or Metaxylene				
	Example			
	15	16	17	18
	Type of Catalyst			
	Ni/ Mn/Br	Ni/Mn/ Zr/Br	Ni/Mn/Br	Ni/Mn/Zr/Br
<u>Catalyst, mmol</u>				
Nickel	2.01	2.01	2.01	2.01
Manganese	2.01	2.01	2.01	2.01
Zirconium	0.0	.19	0.0	0.19
Bromide	4.02	4.02	2.01	4.02
<u>Oxidation Rate, ml O<sub>2</sub>/min</u>				
at 0.3% H <sub>2</sub> O	2.92	5.70	6.68	6.31
at 5.0% H <sub>2</sub> O	0.49	2.13	.56	1.66
at 13.0% H <sub>2</sub> O	0.35	1.44	.23	0.62
at 20.0% H <sub>2</sub> O	0.20	1.14	.16	.34

<sup>a</sup>Reactions were run in a glass reactor containing 2.01 mmole cobalt(II) acetate tetrahydrate, 2.01 mmole manganese(II) acetate tetrahydrate, 4.00 mmole sodium bromide, and 100.0 ml acetic acid. The source of oxygen was air which was passed through a glass frit at the bottom of the reactor at a rate of 52 ml/min. The vent oxygen concentration was constantly measured using a Beckman oxygen analyzer. The rate of oxygen uptake was calculated from the vent oxygen concentration and the flow rate of air through the reactor. The temperature was maintained at 95° C. and the pressure was atmospheric. Examples 17, 18 contained 15.0 ml p-xylene. Examples 19, 20 contained 15.0 ml m-xylene.

From this table, it seems reasonable to assume that Partenheimer et al does suggest that the reaction process can be conducted either the catalyst system substantially free of zirconium or the catalyst system completely free of zirconium as disclosed in examples 15-18; furthermore, Partenheimer et al expressly supports the claimed concept in view of the oxidation rate being increased in the catalyst system completely free of zirconium. Therefore, applicants' arguments are not persuasive.

Fourth, regarding the fourth argument, the Examiner has noted applicant's argument. However, unlike applicants argument, the Partenheimer et al expressly discloses the following generic teaching about the ranges of the reaction temperature

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and the reaction pressure for the oxidizing the p-xylene in the reactor (see col. 2, lines 34-41 and 60-65):

The source of molecular oxygen for the nickel and zirconium enhanced oxidation of this invention can vary in O<sub>2</sub> content from that of air to oxygen gas. Air was the preferred source of molecular oxygen for oxidations conducted at temperatures at 100° C. and above up to 260° C. For oxidations conducted with molecular oxygen the preferred temperatures were in the range of about 120° C. to about 220° C. The minimum pressure

The batchwise oxidations were conducted by charging all of the catalyst components, pseudocumene, p-xylene or m-xylene and acetic acid or water, sealing the reactor; setting a pressure control valve initially to 150 psig (valve was in exhaust vent line); pressuring the reactor to 150 psig with nitrogen; heating the reactor

Therefore, applicants' arguments are not persuasive.

### Conclusion

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

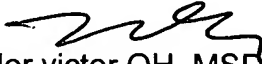


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas McKenzie can be reached on 571-272-0670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Taylor victor OH, MSD,LAC  
Primary Examiner  
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4/15/07